IFW AF 3723

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:
Collier, et al.

Serial No. 09/899,871

Filed: July 6, 2001

For: METHOD AND SYSTEM FOR CLEANING A POLISHING PAD

§ Group Art Unit: 3723
§ Examiner: Wilson, L.
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§ Atty. Dkt. No. 5298-05700
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August 16, 2004 (Date) Pamela Gerik (Pamela Gerik)

SUPPLEMENTAL APPEAL BRIEF

Box AF
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Sir/Madam:

In response to an Advisory Action mailed on July 15, 2004, the Appellant presents this Supplemental Appeal Brief to request reinstatement of the Appeal for the captioned case. The Appeal was initiated by a Notice of Appeal filed August 6, 2003 and an Appeal Brief was filed October 3, 2003. In response thereto, an Examiner's Answer was mailed March 17, 2004 withdrawing the 102(e) rejection of claims 11, 12, 14, and 16-22 in view of U.S. Patent No. 6,284,092 to Manfredi. New points of argument in regard to the 102(e) rejection of claims 11, 12, 14, and 16-22 in view of U.S. Patent No. 6,283,840 to Huey, however, were added. In response to the Examiner's Answer, a Reply Brief was filed on May 17, 2004 with an amendment to claim 11 in the interest to expedite resolution of the captioned case. Subsequent thereto, prosecution was reopened through the Advisory Action mailed July 15, 2004 stating that the amendment raised new issues.

The Applicant hereby requests reinstatement of the Appeal without the amendment to claim 11 and, therefore, the Appellant hereby appeals to the Board of Patent Appeals and Interferences a final rejection of claims 11, 12, 14 and 16-22 and respectfully requests that this appeal be considered by the Board. This Supplemental Appeal Brief addresses the points of arguments presented in the Examiner's Answer as well as arguments previously presented for the final rejection of claims 11, 12, 14 and 16-22 in view of U.S. Patent No. 6,283,840 to Huey.

I. REAL PARTY IN INTEREST

The subject application is owned by Cypress Semiconductor Corporation, a corporation having a place of business at 3901 North First Street, San Jose, CA, 95134.

II. RELATED APPEALS AND INTERFERENCES

No other appeals or interferences are known which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-28 were originally filed in the present application on July 6, 2001. In response to an Office Action mailed November 20, 2002, claims 2, 13, 15, 25 and 26 were canceled and claims 1, 3, 11, 12, 14, 16-18, 23, 24 and 27 were amended. Claims 1, 3-10, 23, 24, 27 and 28 were deemed allowable in the Advisory Action mailed July 17, 2003. Claims 11, 12, 14 and 16-22 stand finally rejected under 35 U.S.C. § 102(e) and are the subject of this appeal. A copy of claims 11, 12, 14 and 16-22, as on appeal, is included in the Appendix hereto.

IV. STATUS OF AMENDMENTS

No amendments to the claims have been filed subsequent to their final rejection. Therefore, the Appendix attached hereto reflects the current state of the claims.

V. SUMMARY OF THE INVENTION

Appellant's claimed invention relates to semiconductor device manufacturing, and more particularly, to a method and spray element for cleaning a polishing pad of a polishing system (Specification -- page 1, lines 3-4). The spray element is adapted to remove matter adhered to a polishing pad by spraying a pressurized fluid upon the polishing pad (Specification -- page 5, lines 8-9). In particular, the spray element may include a plurality of nozzles configured to spray the pressurized fluid (Specification -- page 7, lines 1-2). In some embodiments, the plurality of nozzles may be arranged such that a spray distribution from one of the plurality nozzles overlaps a spray distribution from an adjacent nozzle (Specification -- page 7, lines 2-4). Regardless of the spray distribution of the nozzles, the spray element may further include one or more adjustable shields arranged about the plurality of nozzles (Specification -- page 7, lines 4-5). In particular, the shields may be arranged along the sides of the spray element parallel to the projection of the nozzles (Specification -- page 7, lines 5-6). In some cases, the spray element may be adapted to be positioned within a polishing system (Specification -- page 5, lines 9-10). For example, the spray element may, in some embodiments, include a mounting structure with which to couple the spray element to the polishing system (Specification -- page 7, lines 6-8). In some cases, the spray element may be adapted to be positioned within the polishing system such that pressurized fluid is dispersed across a region extending across at least half of the width of the polishing pad (Specification -- page 6, lines 28-30).

As noted above, the claimed invention relates to a method for cleaning a polishing pad. The method may include moving the polishing pad relative to a spray element (Specification -- page 7, lines 10-11). In such an embodiment, the spray element and polishing pad may be positioned within a polishing system such that fluid openings of the spray element are directed toward the polishing pad (Specification -- page 7, lines 11-13). In addition, the method may include spraying a pressurized fluid in a pulsating sequence upon the polishing pad while moving the polishing pad (Specification -- page 7, lines 13-15 and page 26, lines 8-9). In some cases, the spraying step may be conducted after polishing one or more semiconductor topographies with the polishing system (Specification -- page 7, lines 21-22). In addition or alternatively, the duration of the spraying step may be sufficient such that the pressurized fluid is dispensed across the entire upper surface of the polishing pad (Specification -- page 7, lines 15-16). Furthermore, the fluid may be sprayed at a sufficient pressure to dislodge the matter adhered to the polishing pad (Specification -- page 7, lines 17-18). For example, in some cases, the fluid may be sprayed at a pressure between approximately 25 psi and approximately 45 psi (Specification -- page 7,

lines 18-19). In this manner, the method may further include removing matter adhered to the polishing pad (Specification -- page 7, line 20).

VI. ISSUES

1. Whether claims 11, 12, 14 and 16-22 are unpatentable under 35 U.S.C. § 102(e) by U.S. Patent No. 6,283,840 to Huey (hereinafter referred to as "Huey").

VII. GROUPING OF CLAIMS

Claims 11, 12, 16 and 17 (Group I) stand or fall together.

Claim 14 (Group II) stands or falls alone.

Claims 18-22 (Group III) stand or fall together.

The reasons why the three groups of claims are believed to be separately patentable are explained below in the appropriate parts of the Argument.

VIII. ARGUMENT

The polishing rate performance of polishing systems and the resultant uniformity of wafers polished by polishing systems degrades as matter builds up in the pores and on the upper surface of the polishing pad during the polishing process. The matter may include particles from the polishing fluid or from the polished wafer. As the polishing chemistry is exposed to air during the polishing process, the liquid portion of the fluid evaporates leaving polishing solution particles and wafer particles to clog the pores of the polishing pad. Such clogging restricts the amount of slurry that is able to fill the pores and consequently limits the amount of slurry that may be contained within the vicinity of the polishing pad. In addition, the slurry particles tend to agglomerate forming large masses adhered to the polishing pad. Such an accumulation may be referred to as "glazing" and essentially smoothes out the textured surface of the pad, thereby reducing the effectiveness of the polishing pad. Consequently, the efficiency and performance of a polishing system may be adversely affected by matter adhered to the polishing pad of the system. *See,* Specification: page 3, lines 23-30 and page 4, lines 1-7.

In order to increase the effectiveness of a polishing pad in a polishing system, the polishing pad may be cleaned periodically. Such a cleaning process is typically a sporadic manual process which involves shutting down the polishing system and depositing water upon the pad in an effort to suspend the particles in solution and subsequently wash them away. Unfortunately, such a process typically does not remove all matter from the pad. More specifically, the conventional cleaning process may only be able to suspend matter loosely adhered to the polishing pad. As such, the current cleaning process may not be able to dislodge all matter adhered to the polishing pad. Consequently, the polishing performance and efficiency of the system may degrade more quickly since additional matter may build upon the polishing pad. In addition, such a cleaning process is typically performed when the polishing system is not in use. Typically, in order to reduce downtime of the polishing system, the cleaning process is performed after a specific number (e.g., 25) of wafers has been processed. In this manner, as the polishing process continues, matter continues to accumulate upon the polishing pad and uniformity from wafer to wafer decreases. Furthermore, since the process is manual, the length and the coverage of the cleaning process may vary. As such, the performance and efficiency of the polishing system may vary, thereby reducing the process capability of the system. *See,* Specification: page 4, lines 9-25.

The invention as recited in claims 11, 12, 14 and 16-22 addresses the above-described problems by providing a method and a spray element for cleaning a polishing pad of a polishing system. The method may include moving the polishing pad relative to a spray element, spraying a pressurized fluid on the polishing pad in a pulsating sequence and removing matter adhered to the polishing pad. In turn, the spray element may be adapted to remove matter adhered to a polishing pad by spraying a pressurized fluid through a plurality of nozzles. In some embodiments, the spray element may include a mounting structure with which to couple the spray element to a polishing system and a plurality of shields arranged about the plurality of nozzles. In this manner, the spray element and method may be used during a polishing process of a wafer or between processing of wafers without causing the polishing system to be shutdown. *See,* Specification: pages 5-8.

ISSUE 1 ARGUMENTS

A. Patentability of Group I Claims 11, 12, 16 and 17

1. Huey does not disclose a spray element which includes one or more adjustable shields arranged about a plurality of nozzles.

Claim 11 recites in part, "[a] spray element adapted to be positioned within a polishing system ... wherein the spray element comprises a plurality of nozzles ... and one or more adjustable shields arranged about the plurality of nozzles." Huey teaches a plurality of polishing stations 14 each including a polishing pad 54 and an arm assembly 60 mounted to table top 57 (Huey, Fig.1 and column 3, lines 17-44). Arm assembly 60 includes nozzles 72 and, therefore, may serve as a spray element. Although housing 64 and retainer 78 of arm assembly 60 may be used to enclose streams 76 from nozzles 72, there is no teaching or suggestion within Huey that housing 64 and/or retainer 78 are adjustable independent of assembly arm 60. Consequently, Huey fails to disclose a spray element with adjustable shields as recited in claim 11. As a result, Huey does not anticipate the limitations of claim 11. The standard for "anticipation" is one of fairly strict identity. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), MPEP 2131.

2. The mobility of the arm assembly within Huey does not constitute a spray element with adjustable shields.

The Final Office Action states that Huey teaches a system with arm assembly 60 configured to move and, consequently, teaches a system with adjustable shields. Such a basis for rejection, however, is asserted to be erroneous in light of the scope of the claimed subject matter. In particular, the subject matter of claim 11 is a spray element with adjustable shields, rather than a polishing system with adjustable shields as inferred by the statements made in the Office Action. As such, the limitation of "one or more adjustable shields" in claim 11 specifies the configuration of the claimed spray element, rather than a configuration of a polishing system to have shields which may be repositioned within the system. In particular, the adaptation of the shields to be adjustable is relative to the components of the claimed spray element rather than the polishing system in which the spray element is adapted to be positioned. Consequently, the mobility of the spray element within Huey does not constitute the limitation of the claimed spray element to have adjustable shields.

3. There is no motivation within Huey to teach or suggest a spray element with one or more adjustable shields arranged about a plurality of nozzles.

Huey specifically teaches interposing retainer 78 between assembly housing 64 and polishing pad 54 to form "... a dam to retain slurry and rinse water within a reservoir formed by the retainer and pad." (Huey, column 4, lines 42-43). As such, there is no motivation for assembly housing 64 to be adjustable since raising the sidewalls of assembly housing 64 would prevent the formation of a dam on

polishing pad 54. If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) MPEP 2143.01. Consequently, claim 11 is asserted to be patentably distinct from Huey.

4. The claim language of claim 11 does not allow for shields attached to a mobile arm to constitute adjustable shields.

As noted in the Examiner's Answer mailed March 17, 2004, the Examiner disagrees with the Appellant's contention that mobility of the arm assembly taught by Huey fails to constitute a spray element with adjustable shields. In particular, page 4 of the Examiner's Answer states, "The claim language is broad and merely calls [for] adjustability of the shields; therefore, the broadest interpretation of the claim would allow for ... shields attached to a mobile arm to constitute adjustable shields." The Examiner uses the same argument to refute the Appellant's contention that there is no motivation within Huey to teach or suggest a spray element with one or more adjustable shields arranged about a plurality of nozzles. The Appellant disagrees with the Examiner's argument. In particular, the Appellant asserts that a spray element with adjustable shields cannot be broadly construed to include spray elements with fixed shields, which are only able to move or "be adjustable" as the Examiner refers to them by the adaptation of the spray element to move.

As noted above, the limitation of the claimed spray element to include adjustable shields specifically refers to the configuration of the spray element to include shields which are configured to move relative to the spray element and not the polishing system in which the spray element may be arranged. A specific reference is not needed to clarify to which the shields are adjustable, since the shields are components of the spray element and, therefore, are adjustable relative to the claimed spray element. A similar correlation may be shown by comparing a bike with a fixed set of handle bars and a bike with an adjustable set of handle bars. Although the bike with the fixed set of handle bars may be adapted to move, the fixed handle bars are not considered to be adjustable. In particular, the adaptation of the handle bars to be adjustable or fixed is relative to the components of the bike and not the environment in which the bike is positioned. It is, therefore, asserted that the mobility of the spray element provided within Huey does not constitute the limitation of the claimed spray element to have adjustable shields. Furthermore, without any teaching or suggestion within Huey to provide such a spray element, there is no motivation within Huey to teach the limitations of claim 11.

Conclusion

As explained in Arguments 1-4 above, at least some limitations of independent claim 11, are not disclosed by Huey. Furthermore, there is no motivation within Huey to teach the limitations of claim 11. Moreover, the basis for rejection in the Final Office Action is asserted to be erroneous. In addition, the claim language of claim 11 does not allow for shields attached to a mobile arm to constitute adjustable shields as lodged by the Examiner. Therefore, for at least these reasons, independent claim 11 is asserted to be patentably distinct over Huey. Since claims 12, 16 and 17 are dependent from claim 11, claims 12, 16 and 17 are asserted to be patentably distinct over Huey for at least the same reasons as that claim. Accordingly, the § 102(e) rejection of Group I claims 11, 12, 16 and 17 in light of Huey is asserted to be erroneous.

B. Patentability of Group II Claim 14

Because claim 14 of Group II is dependent from claim 11 of Group I, the arguments presented above for patentability of claim 11 apply equally to claim 14, and are herein incorporated by reference. Claim 14 specifies the spray distribution from one nozzle of the claimed spray element overlaps a spray distribution from an adjacent nozzle of the claimed spray element. This limitation makes claim 14 separately patentable over Huey, as described in more detail below.

1. Huey does not disclose a spray element with a nozzle having a spray distribution which overlaps a spray distribution of an adjacent nozzle.

Claim 14 recites, "[t]he spray element of claim 11, wherein a spray distribution from one of said plurality nozzles overlaps a spray distribution from an adjacent nozzle." As shown in Fig. 3 of Huey, nozzles 72 are sufficiently spaced apart such that the spray distributions from the nozzles do not overlap. Consequently, Huey does not anticipate the limitations of claim 14. The standard for "anticipation" is one of fairly strict identity. The identical invention must be shown in as complete detail as is contained in the ... claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) MPEP 2131.

The Examiner disagrees with the Appellant's contention that Huey does not disclose a spray element with a nozzle having a spray distribution which overlaps a spray distribution of an adjacent nozzle. In particular, page 5 of the Examiner's Answer states in reference to Huey that "... the nozzles

are spaced apart but the spray patterns are close enough to have overlap of streams [e.g.,] notice the two set[s] of nozzles closest together." Such a statement, however, is traversed. Fig. 3 in Huey specifically illustrates spray streams 76 from nozzles 72 not overlapping. In addition, even if spray streams 76 are extrapolated down to polishing pad 54, spray streams 76 do not overlap. Although some of the nozzles illustrated in Huey are spaced closer together than others, there is no teaching or suggestion that the nozzles are spaced close enough that streams provided therefrom overlap. Consequently, Appellant asserts that the Examiner has failed to support a ground of anticipation by Huey, and respectfully requests that the Board of Patent Appeals overturn the Examiner's rejections of present Group II claim 14. The Examiner cites U.S. Patent 5,578,529 to Mullins "... as another example of how streams can overlap." As noted in the Examiner's Answer, however, U.S. Patent 5,578,529 to Mullins has not been applied to the rejections of the presently claimed case and, therefore, adds no merit to argument supporting the rejections of the captioned appeal.

2. There is no motivation to modify Huey to provide a spray element with a nozzle having a spray distribution which overlaps a spray distribution of an adjacent nozzle.

As noted above, Huey fails to disclose a spray element with a nozzle having a spray distribution which overlaps a spray distribution of an adjacent nozzle. In fact, Huey fails to even imply a spray element with such a configuration. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed.Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992); and, MPEP 2143.01. Without some teaching or suggestion to teach the limitations of claim 14, there is no motivation within claim 14 to teach the limitations of the presently claimed case. Consequently, claim 14 is asserted to be patentably distinct over Huey.

Conclusion

As explained in Arguments 1 and 2 above, at least some limitations of Group II claim 14 are not taught or suggested by Huey. In addition, there is no motivation within Huey to teach the limitations of claim 14. For at least these reasons, claim 14 is asserted to be patentably distinct over Huey and the § 102(e) rejection of Group II claim 14 in light of Huey is asserted to be erroneous.

C. Patentability of Group III Claims 18-22

1. Huey does not disclose a method for cleaning a polishing pad which includes spraying a pressurized fluid in a pulsating sequence upon the polishing pad.

Claim 18 recites in part, "[a] method for cleaning a polishing pad, comprising ... spraying a pressurized fluid in a pulsating sequence from the spray element upon the polishing pad ... ." There is no teaching or suggestion within Huey of spraying a pressurized fluid in a pulsating sequence upon polishing pad 54. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), MPEP 2131. As such, Huey does not anticipate the limitations of claim 18.

2. There is no motivation within Huey to teach or suggest a method which includes spraying a pressurized fluid in a pulsating sequence upon a polishing pad.

Not only does Huey not teach or suggest spraying a pressurized fluid in a pulsating sequence, Huey fails to disclose any adaptations for nozzles 72 and/or arm assembly 60 which would produce such a spraying sequence. Consequently, there is no teaching, suggestion or motivation within Huey to produce the method recited in claim 18. To establish a *prima facie* obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974); MPEP 2143.03.

3. The presumption made in the Office Action that pulsating a pressurized fluid upon a polishing pad is a natural use of the claimed apparatus is not a proper basis for rejection for the claimed method.

The basis for the rejection of claim 18 in the Final Office Action is that the claimed method "... is merely the natural use of the claimed apparatus." (Office Action, page 2). Applicant is unaware of any legal precedent that bars claims from being directed at a method of using an apparatus, presuming the claimed process steps are novel and are unobvious. As noted above, Huey neither teaches nor suggests spraying a pressurized fluid in a pulsating sequence and, therefore, provides no teaching or suggestion that such a method is not novel or unobvious. As such, even if the claimed method is a natural use of the claimed spray element, such reasoning cannot be used as a basis for the rejection of the claimed method.

4. Pulsating a pressurized fluid upon a polishing pad is not necessarily a natural use of the apparatus of the presently claimed case.

As noted above, the Final Office Action states the claimed method "... is merely the natural use of the claimed apparatus." (Office Action, pages 2). Such a statement is traversed, however. In particular, pulsating a pressurized fluid upon a polishing pad is not necessarily a natural use of the claimed spray element. A "natural" or expected use of a spray element may be to spray a fluid. The manner in which the fluid is sprayed, however, may depend upon the application for which is used and, therefore, may not necessarily be "natural" or inherent. For example, the Specification teaches spraying a pressurized fluid in a pulsating sequence may be advantageous "...so that the fluid dispersed from the spray element may not dilute the slurry used to polish the topography." (Specification, page 26, lines 3-4). Without some teaching or suggestion of spraying fluid in a pulsating sequence for such a purpose or any other purpose, there is motivation to use a spray element in the manner recited in claim 18. As noted above, Huey fails to teach or suggest spraying a fluid in a pulsating sequence. As such, Huey fails to provide any motivation to teach or suggest a method including such a step.

5. Pulsating a pressurized fluid upon a polishing pad is not a matter of operator choice.

The Final Office Action states "The limitation of having [a] pulsating sequence would be a matter of intended use because the user can manually or automatically cause the spray to pulsate as a matter of operator choice." (Office Action, pages 2). As noted above, the Specification specifically teaches spraying a pressurized fluid in a pulsating sequence may be advantageous "...so that the fluid dispersed from the spray element may not dilute the slurry used to polish the topography." (Specification, page 26, lines 3-4). Consequently, pulsating a pressurized fluid may not simply be a matter of operator choice, but offers a manner with which to enhance the operation of the polishing system. Furthermore, in order to deem a limitation of a method claim to be a matter of operator choice, some recognition of and/or motivation to use the method must be present in a cited reference. The mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant's specification, to make the necessary changes in the reference device. *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984); MPEP 2144.04. As noted above, Huey fails to teach or suggest spraying a pressurized fluid upon a polishing pad in a pulsating sequence. Furthermore, Huey fails to teach or suggest a system in which the flow sequence from a spray element may be altered by an operator. As such, Huey fails to provide any teaching or suggestion that spraying a fluid in such a manner is possible with the apparatus claimed therein, much less a matter of operator choice. As such, the limitation of spraying a pressurized

fluid upon a polishing pad, as recited in claim 18, cannot be a matter of operator choice in light of the teachings of Huey.

6. The adaptation of a distribution system to be turned on and off does not constitute an adaptation to pulsate.

In the Examiner's Answer mailed March 17, 2004, the Examiner disagrees with the Appellant's contention that pulsating a pressurized fluid is not necessarily a natural use of the presently claimed case. In addition, the Examiner disagrees with the Appellant's contention that pulsating a pressurized fluid upon a polishing pad is not a matter of operator choice. In particular, the Examiner cites Huey as disclosing that fluids can be turned on and off, constituting the pulsating sequence recited in claim 18. On the contrary, the fact that the cleaning distribution system disclosed in Huey may be configured to be turned on and off does not constitute the pulsating sequence outlined in claim 18. As defined in Merriam-Webster's Dictionary, pulsating means to exhibit a pulse or pulsation: beat. Pulse is defined in Merriam-Webster's Dictionary as a transient variation of a quantity whose value is normally constant; or as a dose of a substance especially when applied over a short period time. There is no teaching or suggestion to vary the distribution of fluid through the system disclosed in Huey relative to quantity or time. Consequently, it is asserted that the Examiner's contention that Huey discloses a pulsating sequence is erroneous.

7. The Specification clearly discusses pulsating sequences which may be used for the claimed method and defines the term "pulsating" such that one skilled in the art would be aware of its meaning.

The Examiner's Answer further states that "Appellant has not specified pulsating or really define some sequence or special pattern to be considered" relative to the limitations of claim 18. On the contrary, page 26, lines 8-15 of the Specification clearly discusses a pulsating sequence which may be used for the method recited in claim 18:

> In some embodiments, the spray element may be activated in a pulsing sequence. In such an embodiment, the spray element may be programmed to be activated, terminated, and reactivated in a given amount of time. For example, the spray element may be activated for approximately 1 second to approximately 1 minute. The spray element may then be placed in standby mode for approximately 1 second to approximately 1 minute before being reactivated. In a preferred embodiment, the spray element may be programmed to pulse between activation mode of approximately 10 seconds and standby mode for approximately 5 seconds.

Although the pulsating sequence recited in claim 18 is not restricted to such a pulsating sequence, it is asserted that the Appellant has defined the term such that one skilled in the art would be aware of its meaning. In addition, it is asserted that "pulsating" has a well-known and ordinary meaning as referenced from Merriam-Webster's Dictionary above.

8. No reference to a structure used to generate a pulsating sequence is needed in order to distinguish the limitations of claim 18 from Huey.

The Examiner's Answer further states in regard to arguing the Appellant's contention that pulsating a pressurized fluid upon a polishing pad is not a matter of operator choice, the "Appellant has not recited any special structure that is used to accomplish this pulsating. This structure can be used as a matter of choice by the operator to accomplish a pulsating fluid." The subject matter of claim 18 is a method for cleaning a polishing pad. No recitation of a structure for conducting the claimed pulsating sequence is needed unless to distinguish it from prior art. As noted above, Huey fails to disclose spraying a pressurized fluid in a pulsating sequence and, therefore, no reference to a structure used to generate a pulsating sequence is needed in order to distinguish the limitations of claim 18 from Huey. Furthermore, the inclusion or exclusion of such a structure does not lend the pulsating limitation to be a matter of operator choice. As noted above, in order to deem a limitation of a method claim to be a matter of operator choice, some recognition of and/or motivation to use the method must be present in a cited reference.

> The mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant's specification, to make the necessary changes in the reference device. *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984); MPEP 2144.04.

As noted above, Huey does not teach, suggest or provide motivation to spray a pressurized fluid in a pulsating sequence. Consequently, the Examiner's argument that the limitations of claim 18 is a matter of operator choice is reasserted to be erroneous.

Conclusion

As explained in Arguments 1-8 above, at least some limitations of Group III claim 18 is not taught or suggested by Huey. In addition, there is no motivation within Huey to teach the limitations of claim 18. Furthermore, the presumption made in the Final Office Action that pulsating a pressurized fluid upon a polishing pad is a natural use of the claimed apparatus is traversed and cannot be used as a basis for rejection for the claimed method. Moreover, the limitation of pulsating a pressurized fluid upon a polishing pad in claim 18 is not a matter of operator choice. For at least these reasons, claim 18 is asserted to be patentably distinct over Huey. Since claims 19-22 are dependent from claim 18, claims 19-22 are asserted to be patentably distinct over Huey for at least the same reasons as that claim. Accordingly, the § 102(e) rejection of Group III claims 18-22 in light of Huey is asserted to be erroneous.

IX. CONCLUSION

For the foregoing reasons, it is submitted that the Examiner's rejection of claims 11, 12, 14, and 16-22 was erroneous, and reversal of his decision is respectfully requested.

Pursuant to MPEP 1208.02, the Commissioner is hereby requested to apply the fee paid with the original Appeal Brief received by the U.S. Patent and Trademark Office on October 6, 2003 to this supplemental brief. If any other fees are required, the Commissioner is authorized to charge them to Conley Rose, P.C. deposit account 03-2769/5298-05700.

Respectfully submitted,

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X. APPENDIX

The present claims on appeal are as follows.

11. A spray element adapted to be positioned within a polishing system and further adapted to remove matter adhered to a polishing pad of the system by spraying a pressurized fluid upon the polishing pad, wherein the spray element comprises a plurality of nozzles configured to spray the pressurized fluid and one or more adjustable shields arranged about the plurality of nozzles.

12. The spray element of claim 11, wherein the spray element is adapted to be positioned within the polishing system such that the pressurized fluid is dispersed across a region extending across at least half of the width of the polishing pad.

14. The spray element of claim 11, wherein a spray distribution from one of said plurality nozzles overlaps a spray distribution from an adjacent nozzle.

16. The spray element of claim 11, wherein said shields are arranged along the sides of the spray element parallel to the projection of the nozzles.

17. The spray element of claim 11, comprising a mounting structure with which to couple the spray element to the polishing system.

18. A method for cleaning a polishing pad, comprising:

moving the polishing pad relative to a spray element, wherein the spray element and polishing pad are positioned within a polishing system such that fluid openings of the spray element are positioned toward the polishing pad;

spraying a pressurized fluid in a pulsating sequence from the spray element upon the polishing pad during said moving; and

removing matter adhered to the polishing pad.

19. The method of claim 18, wherein said spraying is conducted after polishing one or more semiconductor topographies with the polishing system.

20. The method of claim 18, wherein the duration of said spraying is sufficient such that the pressurized fluid is dispensed across the entire upper surface of the polishing pad.

21. The method of claim 18, wherein said spraying comprises spraying the fluid at a sufficient pressure to dislodge the matter adhered to the polishing pad.

22. The method of claim 18, wherein said spraying comprises spraying the fluid at a pressure between approximately 25 psi and approximately 45 psi.